“Mechanisms and differences of healthy and pathological transient high activity events”

Attila Gulyás is a descendant of the school of Janos Szentagothay, who established the modular architectonic principle of neural centers and has inspired a whole generation of neuroscientists. Dr. Gulyás has significantly contributed to understand the microstructure of hippocampal and cortical circuits by combining electrophysiological, pharmacological and anatomical studies using the in vitro slice preparation. Currently, his work is focused in the characterization of different types of interneurons in the hippocampal formation, on the basis of their connectivity, neurochemical marker content and electrophysiological properties. How do interneurons integrate convergent synaptic inputs and generate action potentials during different network activity patterns? How do the different cell types balance the activity of excitatory neurons as a function of network activation and synchrony? How do they contribute to the generation of network pattern in vitro?

Selected publications:


Gulyás A.I, Hájos N. and Freund T.F. (1996) Interneurons containing calretinin are specialized to control other interneurons in the rat hippocampus. J.Neurosci 16(10), 3397-3411

Gulyás A.I., Megías M., iri Z., Freund T.F. (1999) Total number and ratio of excitatory and inhibitory synapses converging onto single interneurons of different types in the CA1 area of the rat hippocampus. J.Neurosci. 19(22), 10082-10097

